

Remarks/Arguments

Claims 1, 2, 5-11, 13-21, 23 and 24 are pending in the present application. Claims 1, 2, 5-11, 13-21, 23 and 24 have been rejected. No claims were merely objected to and no claims were allowed. By entry of this amendment, no claims are cancelled, claims 1, 10 and 19 are amended and no new claims are added. Support for the claim amendments may at least be found at page 5, line 23-page 6, line 4 of the specification as originally filed. No new matter is entered.

Claim Rejections-35 U.S.C. §103

The examiner asserts claims 1, 5-10, 13-20 and 23-24 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S.P.N. 6,495,793 to Tewari ("Tewari") in view of U.S.P.N. 6,387,541 to Gray et al. ("Gray") and U.S.P.N. 5,449,536 to Funkhouser ("Funkhouser") or over Tewari in view of Gray and U.S.P.N. 5,043,548 to Whitney et al. ("Whitney"). Applicants traverse the rejection.

Tewari teaches a method for weld repairing, without preheating, a gas turbine engine blade airfoil composed of a nickel based superalloy (Abstract; col. 2, ll. 54-56; col. 3, ll. 36-50; col. 4, ll. 15-25; col. 5, ll. 24-35). Gray teaches applying a protective coating of layers of a barrier layer and stainless steel or stainless steel, silica and chromium oxide, in that order, upon a titanium aluminide article by physical vapor deposition, chemical vapor deposition, low pressure plasma spraying, air plasma spraying, high velocity oxy fuel plasma spraying, cladding, hot isostatic pressing, or electroplating (Abstract; col. 1, ll. 5-10; col. 2, ll. 14-17, 20-26, 44-48). Funkhouser teaches applying an oxide dispersion strengthened metal coating under sufficient pressure in an oxygen atmosphere upon a substrate composed of a LOX/GOX compatible material (Abstract; col. 2, ll. 3-13, 44-62; col. 3, ll. 37-54; Tables I and II). Whitney teaches a plasma spray apparatus and process (Abstract; col. 1, l. 64-col. 4, l. 25). In particular, Whitney teaches the critical differences between laser plasma spraying and plasma welding (col. 2, ll. 18-41), such that one of ordinary skill in the art at the time the present application would recognize the technical differences between the two deposition techniques and when their respective uses were suitable.

Applicants' independent amended claims 1, 10 and 19 are all directed to methods for

repairing an article affected by sulphidation. Applicants' claimed methods are generally known to one of ordinary skill in the art as laser cladding. One of ordinary skill in the art understands laser cladding is not equivalent to laser welding techniques or plasma welding techniques. Whitney explains the drawbacks of plasma welding when compared to plasma spraying. Applicants contend these drawbacks are equally applicable when comparing plasma welding to laser cladding. And, the technical differences between plasma welding and other techniques arguably dissuade one of ordinary skill in the art from considering their teachings when the object of the method is to not melt the surface region of a substrate such as what happens when performing plasma welding.

Applicants contend the Examiner has assembled a collection of prior art references whose teachings are inconsistent with one another and would not motivate one of ordinary skill in the art to consider combining their respective teachings to teach each and every element of Applicants' amended claims 1, 10 and 19. First, the methods taught by Terwari, Gray and Funkhouser are incompatible with each other. The Examiner may not have considered the details which Applicants now discuss; however, a cited prior art reference cannot be read in a vacuum and must be considered for the entirety of its teachings. Funkhouser specifically teaches applying an oxide dispersion strengthened metal coating under sufficient pressure in an oxygen atmosphere upon a substrate composed of a LOX/GOX compatible material. Given the specific LOX/GOX compatible materials being coated, the operating parameters are geared specifically to applying oxide dispersion strengthened metal coatings without igniting the LOX/GOX compatible material. In contrast, neither Terwari nor Gray teach applying coatings under such extreme circumstances. Rather, Terwari and Gray are relatively opposite in their teachings with respect to coating applications. One of ordinary skill in the art readily observes Terwari relies solely upon plasma welding, while Gray adopts several deposition techniques with one notable exception, that is, welding. The Examiner conspicuously overlooks these critical technical differences between the cited prior art references. Applicants refer to these technical differences as being critical due to the teachings of the Examiner's cited prior art reference to Whitney, whose teachings explain why plasma spraying is far more beneficial than plasma welding when one does not want to melt surface upon which a coating is being deposited.

Applicants contend one of ordinary skill in the art would not be motivated to combine the

teachings of these cited prior art references, as framed by the Examiner, as their individual teachings are entirely incompatible with one another. These cited prior art references lack the requisite motivation to be combined and teach each and every element recited in Applicants' amended independent claims 1, 10 and 19. Furthermore, Applicants' amended claims 1, 10 and 19 now recite in part the following: "causing the replacement section material to metallurgically bond with the affected section and form a replacement section on the article". Arguably, Whitney provides the best explanation why plasma welding (as taught by Terwari) is not equivalent to other deposition techniques because welding melts the surface of a substrate rather than simply heating the surface. Applicants contend the welding technique taught by Terwari would melt the surface of the article and prevent a replacement section material from being metallurgically bonded with the affected section, as recited in Applicants' amended claims, and form a replacement section on the article. Moreover, the combined teachings of Gray and Funkhouser or Gray and Whitney would not provide the requisite motivation to one of ordinary skill in the art to alter the teachings of Terwari for the reasons discussed above. Applicants contend these circumstances provide yet another reason why the cited prior art references fail to teach, suggest or provide the requisite motivation to be combined and teach each and every element of Applicants' amended claims 1, 10 and 19.

For at least these reasons, Applicants contend amended independent claims 1, 10 and 19 are patentable and not obvious in view of the combined teachings of Tewari, Gray and Funkhouser or Tewari, Gray and Whitney.

In light of the foregoing, Applicants respectfully request the examiner withdraw the rejection under 35 U.S.C. §103(a) and find claims 1, 5-10, 13-20 and 23-24 are allowable.

The examiner asserts claims 2, 11 and 21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Tewari, Gray and Funkhouser or Whitney, as stated above in the above paragraph and further in view of U.S.P.N. 6,173,491 to Goodwater et al. ("Goodwater"). Applicants traverse the rejection.

Applicants reiterate their remarks with respect to the combined teachings of Tewari, Gray and Funkhouser and Terwari, Gray and Whitney. Applicants contend the teaching of Goodwater

cannot cure the deficiencies present in the combined teachings of the aforementioned cited references.

Goodwater generally teaches a method for refurbishing turbine engine vanes (Abstract). In framing the present rejection, the examiner cites columns 5-6 and relies upon disclosure directed to machining processes (See col. 4, l. 62-col 5, l. 36). Applicants contend whether or not Goodwater teaches machining processes to strip existing coatings from a vane being refurbished is immaterial. Applicants reiterate the Examiner has conspicuously overlooked the critical technical differences in the teachings of the cited prior art references (Tewari, Gray and Funkhouser / Terwari, Gray and Whitney). Applicants contend one of ordinary skill in the art would not be motivated to alter the teachings of Terwari based upon the combined teachings of Gray and Funkhouser or Gray and Whitney given the differences in their teachings as discussed above. Moreover, Applicants contend Goodwater cannot cure such deficiencies in the combined teachings of Terwari, Gray and Funkhouser or Terwari, Gray and Whitney.

For at least these reasons, Applicants contend claims 2, 11 and 21 are patentable and not obvious in light of the combined teachings of Tewari, Gray and Funkhouser further in view of Goodwater or Terwari, Gray and Whitney further in view of Goodwater.

In light of the foregoing, Applicants respectfully request the examiner withdraw the rejection under 35 U.S.C. §103(a) and find claims 2, 11 and 21 are allowable.

CONCLUSION

In light of the foregoing, it is submitted that all of the claims as pending patentably define over the art of record and an early indication of same is respectfully requested.

An earnest and thorough attempt has been made by the undersigned to resolve the outstanding issues in this case and place same in condition for allowance. If the Examiner has any questions or feels that a telephone or personal interview would be helpful in resolving any outstanding issues which remain in this application after consideration of this amendment, the Examiner is courteously invited to telephone the undersigned and the same would be gratefully appreciated.

It is submitted that the claims as amended herein patentably define over the art relied on by the Examiner and early allowance of same is courteously solicited.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 21-0279.

Respectfully submitted,
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